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Depressive symptoms in people with disabilities; secondary analysis of cross-sectional data from the United Kingdom and Greece

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ABSTRACT

Background: Evidence suggests there is an association between depressive symptoms and disability.
Objective/Hypothesis: The objective of this study was to examine whether people with disabilities in the United Kingdom and Greece face more depressive symptoms than people without disabilities. The hypothesis was that people with disabilities in both countries are more likely to experience depressive symptoms.
Methods: We used data from the 2014 European Health Interview Survey (wave 2). After performing principal-component factor analysis, we carried out logistic regressions, in order to investigate differences in depressive symptoms between people with and without disabilities, and examine the factors affecting depressive symptoms for people with disabilities.
Results: People with disabilities in the UK were 2.8 times more likely to experience depressive symptoms compared to people without disabilities (95% C.I.: 2.51–3.05, $p < .001$), while in Greece, they were 2.2 times more likely to do so (95% C.I.: 1.90–2.64, $p < .001$). Our findings regarding people with disabilities showed that women, older people (in Greece), unemployed and inactive people (in Greece), and better-educated people (in the UK) were more likely to experience depressive symptoms. Married people, older people (in the UK), people living in densely-populated areas (in Greece), people who assessed their health as 'average' or 'good', and people who enjoyed social support (in Greece) were less likely to face depressive symptoms.
Conclusions: Due to population-ageing and higher incidence of depressive symptoms in disabled people, it is important that policies are put in place to address the mental health needs of this population.

Introduction

In 2015, 300 million people across the world lived with a depressive disorder.[1] Many more people are somewhere along on a continuum extending between living with some depressive symptoms to having a depressive episode.[2] Depression is the second leading cause of disability worldwide and can have a severe impact on many aspects of a person's life.[3] According to the World Health Organisation, "*globally depressive disorders are ranked as the single largest contributor to non-fatal health loss*", and number two in high-income countries[1] (p.13). Furthermore, results from the World Health Surveys show that depression can lead to the greatest decrement in health compared to several chronic diseases, including arthritis and diabetes.[4]

People with disabilities, estimated at 15% of the world's population,[5] are often not explicitly included in mental health research, with the exception of studies on specific impairments or the older population. This is despite the fact that disability has been found to be strongly associated with depression,[6] on account of several factors, including loss of independence, diminishing social support, and biological mechanisms.[7–10]

Various types of disabilities, such as learning,[11] sensory,[12] and neurodegenerative,[13] have been associated with a higher prevalence of depression or depressive symptoms, compared to the general population. There are indications of a complex bidirectional causal pathway, especially between physical disability and depressive symptoms: depressive symptoms can lead to functional limitations, with people with depression reporting greater problems in carrying out activities of daily living. Physical disability can

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also lead to the emergence or increase of depressive symptoms.[6,14–16] A similar birectional relationship exists between depressive symptoms and pain in people with physical disabilities[17]: increased levels of depressive symptoms can lead to worse pain, and worse pain can lead to more severe depressive symptoms.

Yang[18] analysed longitudinal data from the US and found that functional disability is strongly associated with increased depressive symptoms in older people. A small part of these effects could be mediated by the existence of social support but disability still exerts a strong effect on depressive symptoms. Barry et al.[19] also found a positive association between disability severity and depressive symptoms in older people. Gunn et al.[20] found a positive association between comorbidity and depressive symptoms, so that people with more co-existing chronic conditions have higher probability of experiencing depressive symptoms.

Depressive symptoms range in a continuum; depending on the amount, severity, and frequency of the symptoms, their manifestation ranges from subthreshold depressive disorder to a full-blown depressive episode; in other words, depression will always include depressive symptoms, but depressive symptoms will not always lead to depression.[1,21,22] In this article, we use the term *depressive symptoms* to refer to any point in this continuum, inclusive of both subclinical and clinical depression. With increased interest in preventive approaches to depression,[1,4] it is important to know who is at more risk of experiencing depressive symptoms in order to target that population in prevention strategies.

Most of the research on depressive symptoms and disability to date has focused on older adults[6,10,18,19] and people with physical disabilities.[7,8,14,16,17] While this research offers valuable information on the relationship between specific impairments or conditions and depressive symptoms, the generalisability of the findings is limited to specific subgroups of disabled people. In this article, we investigate depressive symptoms and disability for adults (people aged 15 and over for Greece-, and 16 and over for the UK) who have disabilities of any nature in Greece and the UK. Our research adds to existing literature by providing evidence into whether people with a disability of any kind are more likely to experience depressive symptoms; it also investigates the factors affecting depressive symptoms for people with disabilities.

Our main aim was to investigate whether people with disabilities in the UK and Greece are more likely to face depressive symptoms compared to people without disabilities. We also looked into the demographic and socioeconomic factors that may affect the expression of depressive symptoms in people with disabilities. Based on previous research,[7–17] the hypothesis of the study was that people with disabilities in Greece and the UK would be more likely to experience depressive symptoms than people without disabilities.

Methodology

Design

We performed secondary analysis of cross-sectional data from the European Health Interview Survey (EHIS) for the UK and Greece. Since the UK opted out from the first EHIS wave (2006–2009), the analysis for both countries relied on the 2014 EHIS, Wave 2. The EHIS is conducted in various European Union countries every five years, with the aim of collecting statistics on health status, access and use of health care, and health determinants of the population, and thus, achieving "*a high level of harmonisation of the survey results across countries*"[23] (p. 6). The target population is adults (defined, depending on the country, as people aged 15 or 16 and over) who live in private households; people living in residential care or who are hospitalised are excluded. The EHIS covers four modules: a) demographic and socioeconomic variables, such as sex, age, household type, etc.; b) health status, for example self-perceived health, chronic illnesses, daily activities limitations, etc.; c) health care use, for instance unmet needs, preventive actions, hospitalisation, etc.; and d) health determinants, such as smoking, alcohol consumption, exercise, etc.[24]

EHIS-UK

Access to the data set was granted by the UK Data Service.[25] The EHIS for the UK targeted individuals aged 16 and over, and included a total of 20,161 observations. Data were collected between April 2013 and September 2014. Households were stratified by a) country (England, Wales, Scotland, and Northern Ireland), b) mode (face-to-face interviews, accounting for 20% of all interviews, and telephone interviews), and c) final wave of the Labour Force Survey (LFS) contact.[25]

The EHIS was administered as a follow-up to the LFS. In England, Wales, and Scotland, people that did not object in their final wave of contact completed the survey. In Northern Ireland, a simple random sample of households on the Land and Property Services Agency property gazetteer, which lists private households, was used.[25]

EHIS-Greece

Access to anonymised microdata was granted by the Department of Statistical Information Provision.[26] The EHIS for Greece targeted individuals aged 15 and over, and included a total of 8223 observations. Data were collected between October and December 2014, across Greece, through face-to-face interviews administered by trained researchers.[27] The survey utilised multistage and layered sampling. Sampling was performed according to division of surface units, based at the final stage on the number of households according to the 2011 Census.[26]

Variables and data analysis

In this article we use the terms *people with disabilities* and *disabled people* to refer to people who have a long-standing (more than 6 months) health condition or impairment, of any nature, and experience activity limitations. Since the EHIS does not include a variable on *disability*, two variables from the data set were merged into a new variable, guided by previous research using the same database.[28,29] The first variable (HS2) was "Long-standing health problem: Suffer from any illness or health problem of a duration of at least six months", with answers no/yes. The second variable (HS3) was "General activity limitation: Limitation in activities people usually do because of health problems for at least the past six months", with the possible answers being 'severely limited', 'limited but not severely', and 'not limited at all'. Thus, the new, binary variable 'disability' included two answers: 'no disability', and 'with disability' (people who answered 'yes' to HS2, and 'limited but not severely' and 'severely limited' to HS3). According to this categorisation, the total number of observations for the variable 'disability' for the UK is 15,508, while for Greece is 6385.

Due to case-deletion (default in STATA), our observations in the logistic regression for the UK are 13,183, and for Greece 6074. We did not impute the missing values, since our sample was still large enough, so that statistical power was considered sufficiently high. Case-deletion also did not introduce bias either, since in our case the missing values occurred only in the outcome variables.[30]

Regarding depressive symptoms, the EHIS survey includes eight questions, which correspond to the three main symptoms (1, 2, and

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4 in the list below) and five of the other most common symptoms for a mild, moderate, or major depressive episode, as defined in the ICD-10 Classification of Mental and Behavioural Disorders.[31] These symptoms are very similar (with very slight differences in the phrasing) to the ones in the eight-item Patient Health Questionnaire depression scale (PHQ-8), which constitutes a valid diagnostic for depressive disorders in large clinical studies. The symptoms included are:

1) *Extent of having little interest or pleasure in doing things over the last 2 weeks*;
2) *Extent of feeling down, depressed or hopeless over the last 2 weeks*;
3) *Extent of having trouble falling or staying asleep, or sleeping too much over the last 2 weeks*;
4) *Extent of feeling tired or having little energy over the last 2 weeks*;
5) *Extent of having poor appetite or overeating over the last 2 weeks*;
6) *Extent of feeling bad about yourself, feeling being a failure over the last 2 weeks*;
7) *Extent of having trouble concentrating on things, such as reading the newspaper or watching television, over the last 2 weeks*; and
8) *Extent of moving or speaking so slowly that other people could have noticed or being so fidgety or restless, over the last 2 weeks.*

We used principal-component factor (PCF) analysis, in order to develop a scale where one concept (i.e., depressive symptoms) is identified to represent the core of a set of items (our eight questions). For both countries, all items loaded on only one factor, called *depressive symptoms*. For the UK, the eigenvalue of the factor was 3.03, explaining 38% of the variance in the set of eight items. For Greece, the eigenvalue of the factor was 3.71 explaining 46.4% of the variance in the set of the eight items. The scale reliability coefficient for the UK was Cronbach $a = 0.77$ (acceptable internal consistency), while for Greece it was Cronbach $a = 0.83$ (good internal consistency). Table 1 shows factor loadings; since all items have a loading of higher than 0.4 on a single factor, they are considered a good indicator of that factor.

The control variables included the following: a) *age group*: 16–29 (15–29 for Greece)/30–44/45–59/60–79/80+; b) *civil status*: single/married/widowed/divorced (for Greece, it is single/married/widowed, divorced); c) *urbanisation level*: thinly-populated/intermediate-populated/densely-populated; d) *region*: England/Wales/Scotland/Northern Ireland (for the UK), and Northern Greece/Central Greece/Attiki (county where the capital, Athens, is located)/Aegean Islands, Crete (for Greece); e) *employment*: employed/unemployed/inactive; f) *education*: pre-primary and primary/secondary/tertiary (for the UK, it is pre-primary and secondary/tertiary, short/tertiary); g) *nationality*: British/foreigner, and Greek/foreigner; h) *health self-assessment*: bad/average/good; i) *income quintiles*: net monthly equivalised household income; j) *disability*: no disability/with disability; k) *number of close people to count on in case of serious personal problems*: none/1+; and l; *degree of concern shown by other people in what the person is doing*: no concern/concern. The last two variables (k and l) are an indication of the social support that people may have in their life, which has been shown to have a significant relationship with depressive symptoms.[32]

We used STATA/MP Version 14.2 to carry out logistic regressions – with our outcome variable, *depressive symptoms*, being a binary variable measuring the presence or absence of depressive symptoms – in order to investigate differences in depressive symptoms between people with and without disabilities.

Table 1
Factor loadings.

Item	UK	Greece
1	0.7094	0.7241
2	0.7197	0.7161
3	0.5282	0.6599
4	0.6186	0.6742
5	0.5760	0.6374
6	0.6568	0.7025
7	0.5774	0.6819
8	0.4975	0.6498

Results

Table 2 summarises the characteristics of the study samples regarding people with and without disabilities in the UK and Greece. There were statistically significant differences for almost all variables between people with and without disabilities.

Examining the data, the generally lower socioeconomic status of people with disabilities compared to people without disabilities becomes evident. Less than 13% of people with disabilities have a tertiary education in the UK, while almost 24% of people without disabilities have a tertiary education; for Greece, the percentages are 10% and 31.6%, correspondingly. Regarding employment, 32% of people without disabilities in the UK are inactive, while more than 67% people with disabilities are inactive; for Greece, the percentages are higher with almost 34% and 81%, respectively. Concerning income, almost half of all people with disabilities in the UK belong to the first and second quintile, while only about 32% of people without disabilities belong to these income segments. In Greece, almost a quarter of people without disabilities belong to the richest segment; this percentage is only 14% for people with disabilities.

Next, we carried out logistic regressions. No collinearity distorted the results, since the mean variance inflation factor-VIF was 1.98 for the UK data, and 2.16 for Greece. The results of the logistic regressions confirmed our hypothesis that people with disabilities in the UK and Greece are more likely to face depressive symptoms than people without disabilities. More specifically, in the UK, people with disabilities were 2.8 times more likely to experience depressive symptoms compared to people without disabilities (fully-adjusted odds ratio 2.77; $p < .001$, 95% C.I.: 2.51–3.05). In Greece, people with disabilities were 2.2 times more likely to experience depressive symptoms compared to people without disabilities (fully-adjusted odds ratio 2.24; $p < .001$, 95% C.I.: 1.90–2.64).

Table 3 presents the results of the logistic regressions showing the factors affecting depressive symptoms for disabled people in the UK and Greece (fully-adjusted odds ratios).

The results of the logistic regressions in Table 3 show that for both countries women with disabilities are more likely to experience depressive symptoms than men with disabilities (1.5 more likely for British women and 1.2 times more likely for Greek women). Regarding age, disabled people over the age of 60 in the UK were 1.7 times less likely to experience depressive symptoms compared to disabled people aged 16–29. The same pattern was not observed in Greece, since older disabled people were more than twice more likely to experience depressive symptoms compared to younger people. For the UK, married disabled people were about 1.4 times less likely to experience depressive symptoms compared to single disabled people. Regarding geographical regions, people with disabilities living in Northern Ireland were 1.7 times more likely to experience depressive symptoms compared to people from England; in Greece, people with disabilities living in Attiki county (where the capital, Athens, is located) were 1.3 times more likely to experience such symptoms compared with people from Northern Greece.

In both countries, people with disabilities who gave an 'average' score to their health were twice less likely to experience depressive

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Table 2
Descriptive statistics for people with and without disabilities in the UK and Greece.

Parameter	UK				Greece			
	People without disabilities (n = 7267)		People with disabilities (n = 5916)		People without disabilities (n = 3328)		People with disabilities (n = 2746)	
	n	%	n	%	n	%	n	%
Gender								
Male (n = 5697/2521)	3207	44.1	2490	42.1	1559	46.8	962	35.0
Female (n = 7486/3553)	4060	55.9	3426	57.9	1769	53.2	1784	65.0
p value	$p = .019$				$p < .0001$			
Strength of association (Cramer's V)	V = 0.0205				V = 0.1193			
Age groups[a]								
15–29 (n = 1075/759)	878	12.1	197	3.3	697	20.9	62	2.3
30–44 (n = 2646/1460)	2000	27.5	646	10.9	1237	37.2	223	8.1
45–59 (n = 3443/1411)	2090	28.8	1353	22.9	922	27.7	489	17.8
60–79 (n = 5177/1789)	2092	28.8	3085	52.2	423	12.7	1366	49.8
80+ (n = 842/655)	207	2.9	635	10.7	49	1.5	606	22.1
p value	$p < .0001$				$p < .0001$			
Strength of association (Cramer's V)	V = 0.3449				V = 0.6160			
Civil status[b]								
Single (n = 2684/1375)	1800	24.8	884	14.9	1143	34.3	232	8.5
Married (n = 7537/3395)	4307	59.3	3230	54.6	1877	56.4	1518	55.3
Widowed (n = 1410/1304)	454	6.3	956	16.2	308	9.3	996	36.3
Divorced (n = 1552)	706	9.7	846	14.3				
p value	$p < .0001$				$p < .0001$			
Strength of association (Cramer's V)	V = 0.1995				V = 0.3971			
Regions								
England (n = 10,881)/Northern Greece (n = 2038)	5980	82.3	4901	82.8	1101	33.1	937	34.1
Wales (n = 619)/Central Greece (n = 1654)	305	4.2	314	5.3	850	25.5	804	29.3
Scotland (n = 1106)/Attiki (n = 1619)	647	8.9	459	7.8	972	29.2	647	23.6
N. Ireland (n = 577)/Aegean Islands, Crete (n = 763)	335	4.6	242	4.1	405	12.2	358	13.0
p value	$p = .001$				$p < .0001$			
Strength of association (Cramer's V)	V = 0.0346				V = 0.0668			
Urbanisation								
Thinly-populated (n = 1905/2095)	1061	14.6	844	14.3	890	26.7	1205	43.9
Moderate-populated (n = 3546/1641)	1956	26.9	1590	26.9	994	29.9	647	23.6
Densely-populated (n = 7732/2338)	4250	58.5	3482	58.9	1444	43.4	894	32.6
p value	$p = .847$				$p < .0001$			
Strength of association (Cramer's V)	V = 0.0050				V = 0.1797			
Nationality								
British (n = 12,640)/Greek (n = 5848)	6852	94.3	5788	97.8	3142	94.4	2706	98.5
Foreigner (n = 543/226)	415	5.7	128	2.2	186	5.6	40	1.5
p value	$p < .0001$				$p < .0001$			
Strength of association (Cramer's V)	V = −0.0888				V = −0.1087			
Income								
1st quintile (n = 2588/1280)	1050	14.5	1538	26.0	758	22.8	522	19.0
2nd quintile (n = 2673/1228	1285	17.7	1388	23.5	624	18.8	604	22.0
3rd quintile (n = 2601/1246)	1411	19.4	1190	20.1	536	16.1	710	25.9
4th quintile (n = 2671/1166)	1694	23.3	977	16.5	651	19.6	515	18.8
5th quintile (n = 2650/1154)	1827	25.1	823	13.9	759	22.8	395	14.4
p value	$p < .0001$				$p < .0001$			
Strength of association (Cramer's V)	V = 0.2052				V = 0.1542			
Education[c]								
Pre-primary and primary (n = 8739/2141)	4395	60.5	4344	73.4	457	13.7	1684	61.3
Secondary (n = 1961/2610)	1151	15.8	810	13.7	1821	54.7	789	28.7
Tertiary (n = 2483/1323)	1721	23.7	762	12.9	1050	31.6	273	9.9
p value	$p < .0001$				$p < .0001$			
Strength of association (Cramer's V)	V = 0.1495				V = 0.5012			
Employment								
Employed (n = 6274/1986)	4632	63.7	1642	27.8	1634	49.1	352	12.8
Unemployed (n = 598/743)	304	4.2	294	5.0	579	17.4	164	6.0
Inactive (n = 6311/3345)	2331	32.1	3980	67.3	1115	33.5	2230	81.2
p value	$p < .0001$				$p < .0001$			
Strength of association (Cramer's V)	V = 0.3629				V = 0.4780			
Health self-assessment								
Bad (n = 1322/684)	14	0.2	1308	22.1	4	0.1	680	24.8
Average (n = 2730/1376)	325	4.5	2405	40.7	114	3.4	1262	46.0
Good (n = 9131/4014)	6928	95.3	2203	37.2	3210	96.5	804	29.3
p value	$p < .0001$				$p < .0001$			
Strength of association (Cramer's V)	V = 0.6288				V = 0.7075			
No of close people								
None (n = 258/302)	113	1.6	145	2.5	146	4.4	156	5.7
1+ (n = 5155/5772)	7154	98.5	5771	97.6	3182	95.6	2590	94.3
p value	$p < .0001$				$p = .021$			
Strength of association (Cramer's V)	V = −0.0322				V = −0.0296			

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Table 2 (*continued*)

Parameter	UK				Greece			
	People without disabilities (n = 7267)		People with disabilities (n = 5916)		People without disabilities (n = 3328)		People with disabilities (n = 2746)	
	n	%	n	%	n	%	n	%
Concern								
No concern (n = 248/106)	97	1.3	151	2.6	46	1.4	60	2.2
Concern (n = 12,935/5968)	7170	98.7	5765	97.5	3282	98.6	2686	97.8
p value	$p < .0001$				$p = .017$			
Strength of association (Cramer's V)	V = −0.0446				V = −0.0305			

[a] For the UK, the first age group is 16–24.
[b] For Greece, civil statuses are divided into single/married/widowed, divorced.
[c] For the UK, education level is divided into pre-primary and secondary/tertiary, short/tertiary.

Table 3
Factors affecting depressive symptoms for people with disabilities in the UK and Greece.

Variables	UK		Greece	
	OR[a]	95% CI	OR[a]	95% CI
Sex (male as reference)				
Female	1.48***	1.31–1.67	1.21*	1.01–1.44
Age groups (15–29 as reference)[b]				
30-44	1.17	.77–1.78	2.40**	1.25–4.60
45-59	.89	.60–1.32	2.11*	1.12–3.97
60-79	.59*	.40–.89	1.63	.86–3.09
80+	.61*	.39–.95	2.17*	1.11–4.23
Civil status (single as reference)[c]				
Married	.69***	.56–.85	.75	.53–1.05
Widowed	.92	.71–1.20	.98	.68–1.42
Divorced	.78*	.60–.99		
Region (England/N. Greece as reference)				
Wales/Central Greece	.90	.69–1.17	1.21	.98–1.48
Scotland/Attiki	1.10	.87–1.39	1.33*	1.05–1.69
N. Ireland/Aegean Islands, Crete	1.67**	1.16–2.40	1.29	.99–1.69
Urbanisation (thinly-populated as reference)				
Intermediate-populated	1.02	.84–1.24	.91	.73–1.14
Densely-populated	.99	.83–1.19	.72**	.57–.90
Nationality (British/Greek as reference)				
Foreigner	.80	.53–1.21	.98	.50–1.91
Income (1st quintile as reference)				
2nd quintile	1.00	.84–1.20	1.22	.94–1.59
3rd quintile	.91	.76–1.09	1.13	.87–1.46
4th quintile	.87	.71–1.07	1.14	.87–1.50
5th quintile	.85	.69–1.06	1.13	.83–1.53
Education (pre-primary and primary as reference)[d]				
Secondary	1.00	.84–1.19	.87	.70–1.09
Tertiary	1.23*	1.02–1.49	.91	.65–1.25
Employment (employed as reference)				
Unemployed	1.29	.91–1.83	1.76**	1.16–2.65
Inactive	.97	.81–1.16	1.35*	1.01–1.81
Health self-assessment (bad as reference)				
Average	.48***	.40–.58	.50***	.40–.62
Good	.20***	.17–.24	.23***	.18–.29
No of close people (none as reference)				
1+	.77	.50–1.20	.74	.50–1.09
Concern (no concern as reference)				
Concern	.84	.54–1.29	.39*	.19–.80
Observations	5916		2746	
Pseudo R2	0.0803		0.0827	
LR chi2 (26/25)	568.04		306.62	
Prob > chi2	0.0000		0.0000	

*$p < .05$, **$p < .01$, ***$p < .001$.
[a] Adjusted for all the variables presented in Table 2.
[b] For the UK, the first age group is 16–24.
[c] For Greece, civil statuses are divided into single/married/widowed, divorced.
[d] For the UK, education level is divided into pre-primary and secondary/tertiary, short/tertiary.

symptoms, while people who self-assessed their health as 'good' were five times (for the UK) and 4.5 times (for Greece) less likely to do so, compared to disabled people who gave a 'bad' score to their health. Only for Greece, social support – in the form of concern shown by other people in what the person is doing – was statistically significant, with disabled people who felt that other people showed concern for them being 2.6 times less likely to experience depressive symptoms. For both countries, 'nationality', 'income', and 'number of close people' did not show a statistical significant relationship with depressive symptoms.

Discussion

Our findings show that in both countries adults with disabilities of any nature were more likely to experience depressive symptoms compared to people without disabilities. While evidence shows a strong connection between depressive symptoms and disability for older adults,[19] our findings show that older, disabled people in the UK were less likely to have depressive symptoms than younger people. This might be due to the existence of a comprehensive, yet changing, welfare system.[33] In the case of Greece, older, disabled people were twice more likely to experience depressive symptoms; this may be due to the economic crisis and austerity measures that the country has implemented, which have led to an increase in unemployment and insecurity, and a decrease in pensions,[34,35] and which have affected access to health care for disabled people.[36]

Our results also confirm existing evidence regarding gender disparities in depressive symptoms,[36] with women with disabilities being more likely to experience depressive symptoms compared to men with disabilities. Only in the UK, married disabled people were less likely to experience depressive symptoms compared to single, disabled people. On the other hand, only in Greece, social support, i.e., degree of concern shown by other people, was negatively associated with the existence of depressive symptoms. This finding is consistent with evidence suggesting that social support is associated with lower levels of depressive symptoms in people with physical disabilities.[32]

Unemployment and being inactive were positively associated with depressive symptoms only for Greece, with unemployed and inactive disabled people being more likely to experience depressive symptoms compared to their employed peers. In the UK, the effect of unemployment was not statistically significant. We hypothesise that this finding may be due to differences in the benefits structure in the two countries, with unemployed people in Greece suffering from the added effects of the ongoing financial crisis, which has resulted in deep cuts in the social welfare. These cuts have had a

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considerable impact on the social protection system,[34] leaving many people with limited support to respond to health risks.

Overall, the study's findings point to an important issue that often remains hidden in mental health literature: adult people of any age with disabilities of any nature have higher probabilities of reporting depressive symptoms. Taking into consideration population ageing and that depressive symptoms in older people lead to increased burden of disability, this is a call for action to avoid a public health crisis in the near future. Depressive symptoms have been found to have adverse effects on health even when they do not reach the threshold for full-blown depression.[2,19] Furthermore, depressive symptoms can act as a predictor of cognitive decline.[37] The existing, limited research that focuses on access to mental health services for people with disabilities in general shows that this population has higher unmet needs. Recent studies show that people with disabilities in the UK are over four times more likely to report higher unmet mental health care needs compared to people without disabilities,[29] and in Greece 2.6 times more likely.[28]

This fact is especially worrying when we take into account the impact of funding cuts on mental health care services in the health and social sector in several countries. For example, various studies concur that the incidence of mental illness in Greece has increased since 2008, when the ongoing financial crisis began.[35,38] Severe cuts in funding for mental health care services pose an extra threat to the mental health of the population.[39,40] Although Greece and the UK have universal health coverage and national health services, both countries are undergoing austerity-driven reforms in the health and social sectors, including disability benefits and pensions. Almost 600,000 people (5.7% of the population) in Greece live with a depressive disorder, accounting for 9.1% of total years lived with disability (YLD).[1] In the UK, the figure is almost 2,700,000 (4.5% of the population), accounting for 6.8% of YLD.[1]

Mental health care services across the UK have also been found to be underfunded, leading to unmet needs and long waits.[41] This situation affects disproportionately some areas of the country, such as Northern Ireland, a region that shows higher incidence of mental illness, combined with poorer funding, than elsewhere in the UK41. Our results support this fact, demonstrating that people with disabilities living in Northern Ireland are 1.6 times more likely to experience depressive symptoms compared to people from England.

In order to address the higher probability of depressive symptoms in adult people with disabilities, two main strategies ought to be implemented: a) Policies to address the socioeconomic disparities between people with and without disabilities; and b) Policies to facilitate equitable access to appropriate mental health care. Furthermore, as pain interference and social support are significant predictors of depressive symptoms in people with disabilities,[42] it is important to incorporate pain management strategies in depression prevention and intervention programmes, as well as to reduce social isolation and loneliness by enhancing the development of social networks and social skills of people with disabilities.[43]

The strengths of the study are that it includes a nationally-representative sample and that it explores the effect of several factors on the expression of depressive symptoms in people with disabilities. Furthermore, unlike most previous research that focussed on depressive symptoms of older disabled people or people with physical disability, this study focused on adults that have any type of disability.

One of the limitations of the study is the way disability was defined. In the absence of a question about disability, we combined two questions into one, guided by previous research utilising the EHIS database.[28,29] Both of the questions we used were impairment-, health-, or function-focused, which has implications for the study sample, which may be more skewed toward people with chronic illness. Also, in this study, due to the nature of the available data, we could not differentiate between different disability types. Another limitation is that we cannot make any causal inferences as to the reasons for the observed higher probability of depressive symptoms for people with disabilities due to the cross-sectional nature of the data. Furthermore, the EHIS relies on self-reporting information on mental health, leaving the instrument open to response bias. In this study, we did not differentiate between sub-threshold and full-blown depressive episodes and refer only to depressive symptoms, because we wanted to gain an overall picture of the experience of symptoms of any severity by disabled people.

The findings have several implications for practice and policy. From prevention and information campaigns, to service provision and accessibility, people with disabilities need to be considered in all stages of mental health care. Especially groups of disabled people who may be more likely to experience depressive symptoms, such as women, single, or unemployed people, need to be able to access health care, though outreach campaigns.

Further research is needed to explore experience of depressive symptoms by type of disability, and also differentiate symptoms by severity. This would give important information on the relationship between disability and depressive symptoms, and could be used by policy makers to target specific groups. Furthermore, it is important to explore the impact of changes in mental health care on the accessibility and use of these services by people with disabilities.

Conclusions

The aim of the study was to investigate whether people with disabilities in the UK and Greece are more likely to experience depressive symptoms, compared to people without disabilities. It also examined the demographic and socioeconomic factors affecting depressive symptoms of people with disabilities. Our findings show that the population of disabled people in both countries are more likely to face depressive symptoms than people without disabilities. Concerning people with disabilities, women, older people (in Greece), unemployed and inactive people (in Greece), and better-educated people (in the UK) were more likely to experience depressive symptoms; married people (in Greece), older people (in the UK), people who assessed their health as 'average' or 'good', and people who enjoyed social support (in Greece) were less likely to face depressive symptoms.

Overall, people with disabilities may have higher mental health needs due to depressive symptoms (of any severity, ranging from sub-threshold to full-blown depressive episodes). Given the severe and well-documented impact of depression on population health,[1,3] it is urgent to attend to the increased prevalence of depressive symptoms in people with disabilities. As Prince et al.[44] argue, there can be no health without mental health. It is imperative that the mental health care needs of disabled people become a policy priority.

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